

2811 ?
JFW
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S) : Mino Green
FOR : **STRUCTURED SILICON ANODE**
SERIAL NO. : 10/533,822 ✓
FILED : August 31, 2005
EXAMINER : Unknown
ART UNIT : 2811
CONFIRMATION NO. : 4177
ATTORNEY DOCKET NO. : **KSTR 2 00004**

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In accordance with 37 C.F.R. §§ 1.56, 1.97, 1.98 and MPEP § 609, applicant(s) submit(s) the following Disclosure Statement concerning art of which the applicant(s) is (are) aware. A copy of PTO-1449 is enclosed herewith.

This Information Disclosure Statement should not be construed to be an admission that any information referred to herein or submitted herewith is "prior art" or is considered to be material to patentability for this invention.

The United States Patent and Trademark Office OG Notice dated 12 October 2004 published a final rule revising 37 C.F.R. 1.98 dealing with the content of Disclosure Statements. Paragraph (a)(2) was revised to read in part, "A legible copy of: (i) Each foreign patent; (ii) Each publication or that portion which caused it to be listed, other than U.S. patents and U.S. patent application publications unless required by the

Office." Therefore, Applicant(s) has (have) not enclosed copies of the cited U.S. patents and published patent applications with this Information Disclosure Statement.

In accordance with 37 C.F.R. §1.97(g) and (h), the filing of this Information Disclosure Statement should not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. §1.56(b) exists.

☒ Under § 1.98(a)(3), a concise explanation of relevance is required for information that is not in the English language. Accordingly, the English language documents have no further explanation.

☒ The cited and/or included documents were cited in the specification, in the British and International search reports of related applications and other art enclosed is known to the inventors. Copies of the International and British Search Reports are enclosed.

Consideration of the appropriate paragraph(s) indicated below is respectfully requested:

☐ WITHIN THREE MONTHS OF FILING: Under § 1.97(b)(1), this Information Disclosure Statement is being filed within three months of the filing date of the application (or date of entry of the national stage). Although it is believed no fee is necessary, any deficiency in fees should be handled as set forth below.

☒ BEFORE FIRST OFFICE ACTION: Under § 1.97(b)(3), this Information Disclosure Statement is being filed before the mailing date of a first Office Action on the merits. Although it is believed no fee is necessary, any deficiency in fees should be handled as set forth below.

☐ BEFORE FINAL ACTION, OR NOTICE OF ALLOWANCE, OR ACTION THAT CLOSES PROSECUTION/WITH STATEMENT: Under § 1.97(c)(1), this information shall be considered if filed before the mailing date of a final action, or a Notice of Allowance or action that otherwise closes prosecution in the application if accompanied by the statement:

Under § 1.97(e)(1), the undersigned states:

☐ A. that each item of information contained in the Information Disclosure Statement was first cited in any communication from a foreign patent

office in a counterpart foreign application not more than three months prior to the filing of the Information Disclosure Statement; or

☐ B. that no item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to any individual designated in §1.56(c) more than three months prior to the filing of the Information Disclosure Statement.

☐ **BEFORE FINAL ACTION, OR NOTICE OF ALLOWANCE, OR ACTION THAT CLOSES PROSECUTION/WITH FEE:** Under § 1.97(c)(2), this information shall be considered if filed before the mailing date of a final action if accompanied by a fee in the amount of \$180.00 as required by §1.17(p). Accordingly, the necessary fee accompanies this Information Disclosure Statement, as set forth below.

☐ **AFTER FINAL ACTION, OR NOTICE OF ALLOWANCE, OR ACTION THAT CLOSES PROSECUTION/AND ON OR BEFORE PAYMENT OF THE ISSUE FEE:**

1. Under § 1.97(e)(1), the undersigned states:

☐ A. that each item of information contained in the Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the Information Disclosure Statement; or

☐ B. that no item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to any individual designated in §1.56(c) more than three months prior to the filing of the Information Disclosure Statement; **and**

2. ☐ the fee in the amount of \$180.00 as required by §1.17(p). Accordingly, the necessary fee accompanies this Information Disclosure Statement, as set forth below.

☐ **PRIORITY CLAIM:** The attached PTO 1449 Form includes all patents, publications, or other information previously cited by or submitted to the Office in one or more prior applications from which the present application claims priority. These one or

more prior applications are identified in the papers accompanying the filing of this application.

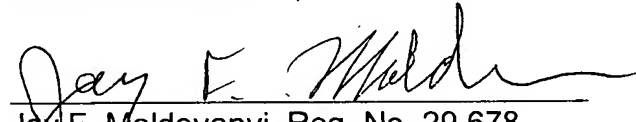
Any payment due for the filing of this Information Disclosure Statement is authorized to be charged to a Credit Card. The appropriate form PTO-2038 is enclosed for this purpose. **If the Credit Card is unable to be charged, please charge any and all fees or credit any overpayment to Deposit Account No. 06-0308.**

It is respectfully requested that the attached document(s) be considered and officially cited in examination of this application.

Respectfully submitted,

FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP

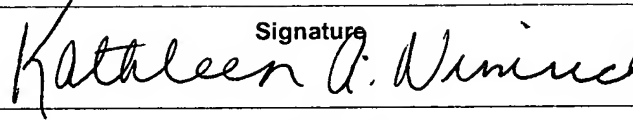
March 14, 2006
Date

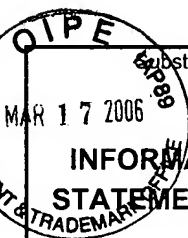

Jay F. Moldovanyi, Reg. No. 29,678
1100 Superior Avenue, Seventh Floor
Cleveland, OH 44114-2579
216-861-5582

CERTIFICATE OF MAILING OR TRANSMISSION

I certify that this Information Disclosure Statement and accompanying document(s) are being

- ☒ deposited with the United States Postal Service as First Class mail under 37 C.F.R. 1.8, addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.
- ☐ transmitted to facsimile number under 37 C.F.R. 1.8 on the date indicated below.
- ☐ deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10, addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.

	 Signature
March 14, 2006 Date	Kathleen A. Nimrichter Printed Name



Substitute for form 1449/PTO

Complete if Known

INFORMATION DISCLOSURE STATEMENT BY APPLICANT(S)	Application Number	10/533,822
	Filing Date	August 31, 2005
	First Named Inventor	Mino Green
	Art Unit	2811
	Examiner Name	Unknown
Sheet 1 of 3	Attorney Docket No.	KSTR 2 00004

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No. Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
	AA	US-5,262,021	11/16/1993	Lehmann et al.
	AB	US-5,907,899	06/01/1999	Dahn et al.
	AC	US-6,022,640	02/08/2000	Takada et al.
	AD	US-6,042,969	03/28/2000	Yamada et al.

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code-Number Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T
	AE	EP 0 820 110	01/21/1998	Sony Corporation (English Text)	<input type="checkbox"/>
	AF	EP 1 011 160	06/21/2000	Kao Corporation (English Text)	<input type="checkbox"/>
	AG	EP 1 258 937	11/20/2002	STMicroelectronics S.r.l. (English Text)	<input type="checkbox"/>
	AH	EP 1 335 438	08/13/2003	Sanyo Electric Co., Ltd. (English Text)	<input type="checkbox"/>
	AI	JP 10-83817	03/31/1998		<input type="checkbox"/>
	AJ	JP 10-199524	07/31/1998	Yuasa Corp. (English Text)	<input type="checkbox"/>
	AK	JP 2001-291514	10/19/2001	Matsushita Electric Ind. Co. Ltd. (English Text)	<input type="checkbox"/>

OTHER - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published	T
	AL	R. A. Sharma et al., "Thermodynamic Properties of the Lithium-Silicon System", J. Electrochem. Soc., 123, pp. 1763-1768 (1976).	<input type="checkbox"/>
	AM	B.A. Boukamp et al., "All-Solid Lithium Electrodes with Mixed-Conductor Matrix", J. Electrochem. Soc., 128, pp. 725-729 (1981).	<input type="checkbox"/>
	AN	R. A. Huggins, "Lithium Alloy Anodes" in Handbook of Battery Materials, J.O. Besenhard Ed., Wiley-VCH, Weinheim, pp. 359-381 (1999).	<input type="checkbox"/>
	AO	S. Bourderau, et al., "Amorphous Silicon as a Possible Anode Material for Li-ion Batteries", J. Power Sources, pp. 233-290, 81 (1999).	<input type="checkbox"/>
	AP	Hong Li et al., "A High Capacity Nano-Si Composite Anode Material for Lithium Rechargeable Batteries", Electrochem. Solid-State Lett., 2, pp. 547-549 (1999).	<input type="checkbox"/>
	AQ	J.O. Besenhard et al., "Will Advanced Lithium-Alloy Anodes Have a Chance in Lithium-ion Batteries?", J. Power Source, 68, pp. 87-90 (1997).	<input type="checkbox"/>
	AU	L.Y. Beaulieu et al., "Reaction of Li with Grain-Boundary Atoms in Nanostructured Compounds", J. Electrochem. Soc., 147, pp.3206-3212 (2000).	<input type="checkbox"/>

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT(S)		Complete if Known			
		Application Number	10/533,822		
		Filing Date	August 31, 2005		
		First Named Inventor	Mino Green		
		Art Unit	2811		
		Examiner Name	Unknown		
Sheet 2 of 3		Attorney Docket No.	KSTR 2 00004		
U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Document No. Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	
	BA	US-6,334,939	01/01/2002	Zhou et al.	
	BB	US-6,337,156	01/08/2002	Narang et al.	
	BC	US-2004/0072067	04/15/2004	Minami et al.	
	BD	US-			
FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Foreign Patent Document Country Code-Number Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T
	BE	JP 2002-313319	10/25/2002	Sanyo Electric Co. Ltd. (English Text)	<input type="checkbox"/>
	BF	JP 2004-296386	10/21/2004	Sanyo Electric Co. Ltd. (English Text)	<input type="checkbox"/>
	BG	NL 1015956	02/19/2002	University of Delft (English Abstract)	<input type="checkbox"/>
	BH	WO 99/33129	07/01/1999	SRI International (English Text)	
	BI	WO 01/13414	02/22/2001	Imperial College of Science, Technology & Medicine (English Text)	
	BJ	WO 2004/042851	05/21/2004	Imperial College Innovations Limited (English Text)	
	BK				<input type="checkbox"/>
OTHER - NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published			T
	BL	J. K. Niparko (Editor), "Cochlear Implants Technology", Pub., Lippincott Williams and Wilkins, Philadelphia, pp. 109 - 121 (2000).			<input type="checkbox"/>
	BM	C.J. Wen et al., "Chemical Diffusion in Intermediate Phases in the Lithium-Silicon System", J. Solid State Chem., 37, pp. 271-278 (1981).			<input type="checkbox"/>
	BN	W.J. Weydanz et al., "A Room Temperature Study of the Binary Lithium-Silicon and the Ternary Lithium-Chromium-Silicon System for use in Rechargeable Lithium Batteries", J. Power Sources, 81-82, pp. 237-242 (1999).			<input type="checkbox"/>
	BO	J-P. Colinge, "Silicon-on-Insulator Technology: Materials to VLSI", Kluwer Acad. Pub, Boston, Chapter 2, p. 38 (1991).			<input type="checkbox"/>
	BP	Mino Green, "Quantum Pillar Structures on n ⁺ Gallium Arsenide Fabricated Using 'Natural' Lithography", Appl. Phys. Lett., 63, pp. 264-266 (1993).			<input type="checkbox"/>

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT(S)	Complete if Known	
	Application Number	10/533,822
	Filing Date	August 31, 2005
	First Named Inventor	Mino Green
	Art Unit	2811
Examiner Name	Unknown	
Sheet 3 of 3	Attorney Docket No.	KSTR 2 00004

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No. Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
	CA			
	CB			
	CC			
	CD			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code-Number Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T
	CE				<input type="checkbox"/>
	CF				<input type="checkbox"/>
	CG				<input type="checkbox"/>
	CH				

OTHER - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume issue number(s), publisher, city and/or country where published	T
	CL	Mino Green et al., "Mesoscopic Hemisphere Arrays for Use as Resist in Solid State Structure Fabrication", J. Vac. Sci. & Tech. B, 17, pp. 2074-2083 (1999).	<input type="checkbox"/>
	CM	Shin Tsuchiya et al., "Structural Fabrication Using Cesium Chloride Island Arrays as a Resist in a Fluorocarbon Reactive Ion Etching Plasma", Electrochem. Solid-State Lett., 3, pp. 44-46 (2000).	<input type="checkbox"/>
	CN	L-C. Chen et al., "Selective Etching of Silicon in Aqueous Ammonia Solution", Sensors and Actuators, A49, pp. 115-121 (1995).	<input type="checkbox"/>
	CO	H. Li et al., "The Crystal Structural Evolution of Nano-Si Anode Caused by Lithium Insertion and Extraction at Room Temperature", Solid State Ionics, 135, pp. 181-191 (2000).	<input type="checkbox"/>
	CP	"Properties of Silicon", Pub. INSPEC, The Institution of Electrical Engineers, London (1988): p. 461 for solubility; p. 455 for diffusion data.	
	CQ	B.E. Deal et al., "General Relationship for the Thermal Oxidation of Silicon", J. Appl. Phys., 36, pp. 3770-3778.	
	CR	L.Y. Beaulieu et al., "Colossal Reversible Volume Changes in Lithium Alloys", Electrochem. Solid State Lett., 4, pp. A137-A140 (2001).	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--